DEPARTMENT OF HEALTH & HUMAN SERVICES
FOOD AND DRUG ADMINISTRATION

Public Health Service

Memorandum

Date Junk **15, 1999**

From Team Leader, Indirect Additive Laboratory
Division of Product Manufacture and Use **(HFS-245)**

Subject FAP **7B4534 -** TPX Copolymers intended for contact with food.

TO Sylvia G. Matson, Program Specialist, Environmental Review Team **(ERT)**
Division of Product Manufacture and Use (HFS-246)

Mitsui Petrochemical Industries submitted data on the melt viscosity, tensile strength, **flexural** modulus and oxygen permeability of the TPX polymer. This data was to support the claim that TPX would not be used primarily for bottles. The data in Attachment 1 demonstrates there is a large difference in the melt viscosity between TPX and LDPE. Additionally, this data also shows that TPX and LDPE also have equivalent melt viscosities at a specific shear rate. This data does not give the melt specifications for making a LDPE bottle, therefore, the relative significance of the data is not clear.

The data on mechanical properties provided by Mitsui Petrochemical Industries show that TPX has similar strength to LDPE but TPX is much stiffer. No control data is provided to illustrate comparison to bottle specifications.

The oxygen permeability data provided in Attachment 2 show that TPX would not make an acceptable bottle that requires barrier properties, i.e. juices and carbonated beverages. This is because the permeability of TPX is about 700 times more permeable to oxygen than PET, the most common bottle polymer used for juices and carbonated beverages. Additionally, based on comparative data between LDPE and PET', TPX appears to be more permeable to oxygen than LDPE. Therefore, because LDPE is a poor barrier material and used in only few bottle applications, TPX would not be expected to be used to make bottles that require barrier to oxygen, i.e. juice, carbonated beverages, and condiment bottles.

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'W. A. Jenkins and J. P. Harrington, Packaging Foods With Plastics, 1991, Technomic Publishing Co. Inc., Table 4.1.

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